LEEWARD ISLANDS

REPORT

OF

The Director of Agriculture for the Year 1946

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SECTION I

AGRICULTURE IN THE COLONY

General

1. This report is presented in a form similar to that adopted in 1945 and consists of a summary of information abstracted from the individual Presidential reports, and reviews agriculture in the Colony and the work of the Department of Agriculture in general. The Chief Veterinary Officer, Leeward Islands, reports on the position with regard to animal health and this attached report should be considered as a section of the main Colony report.

2. In general, it can be said that conditions throughout the year under review continued to show an improvement over those in 1945 with an increased rate of return to normal. The positions with regard to the obtaining of essential agricultural supplies, and the availability of markets and transportation of exportable produce reflected fair improvement.

3. With regard to the two major industries, sugar and sea-island cotton, it is gratifying to record that the total sugar production shows a substantial increase over the 1945 production. In Antigua, there was a marked increase in the amount of cotton produced with considerably improved yields per acre, while in St. Kitts-Nevis and Montserrat there was considerable reduction in the amounts produced. The marked reduction in Montserrat can be attributed to uncertainty of markets and price at planting time as well as to unfavourable weather conditions.

4. The general position with regard to food production compared very favourably with the preceding year. The production of food crops was affected by dry conditions in the early part of the year and there were shortages of ground provisions, but at other times there were surpluses. The corn crop, especially in Antigua, was badly affected by dry weather and was greatly reduced in quantity. There has been a marked improvement with respect to the number of livestock available for meat purposes.

5. The Agricultural Service, while handicapped at times owing to inadequacy of clerical staff, continued to carry out normal duties in addition to those associated with increased food production campaigns, and the implementation of schemes under the Colonial Development and Welfare Act, especially in relation to the establishment of agricultural stations.

Weather Conditions

6. These may be summarized as follows within the Colony:—

ANTIGUA.

The average rainfall was only 37.11 inches which is considerably below the mean (43.62) inches. In addition to being low, the rainfall was very unevenly distributed which adversely affected planting of food crops.

ST. KITTS-NEVIS.

The rainfall in St. Kitts was only 37.95 inches and is the lowest recorded for the past twenty two years. In Nevis, there was considerably less rainfall during the important growing months July—October which affected the growing cane and cotton crops.

MONTSERRAT.

The rainfall figure while not below that of the mean, was unevenly distributed and unfavourable to agriculture in general. Rainfall during the cotton planting and growing season was for the most part so light as to be ineffective, while the moderate rains during August were too late to be of much benefit to the cotton crop.

VIRGIN ISLANDS.

The rainfall was practically the same as that of the preceding year, although the distribution was again uneven, the first eight months of the year being very dry.

AGRICULTURAL INDUSTRIES

Sugar

ANTIGUA.

The total production amounted to 26,024 tons grey crystals and 121 tons muscovado. Corresponding figures for 1943, 1944 and 1945 are shown with related statistics in Table 1.

TABLE I.

Year	Production Grey Crystal	Muscovado	Average Cane Yield Per Acre	Tons of Cane Per Ton of Sugar
1943 ..	21,~~550~~ 867 tons	235 tons	18.3 tons	7.99 tons
1944 ..	16,280 „	126 5 „	16.7 „	7.47 „
1945 ..	20,663 „	72 „	17.26 „	7.15 „
1946 ..	26,024 „	121 „	21.76 „	7.57 „

Yields of cane per acre showed a marked increase over the previous year with an island average of 21.76 tons per acre, and an estate average of 23.59 tons per acre. Juice quality although still very good was rather lower than in 1945, 7.57 tons of cane being required to make a ton of sugar as compared to 7.15 tons. There was a further increase in the price of sugar and the Antigua Sugar Factory Limited crop was sold at £19. 5. 7. per ton f.o.b. Final payments to cane growers were 32/- 2.60443 and 28/9 per ton to contractors and non-contractors respectively. The total acreage reaped was 9,048 acres. The acreage to be reaped in 1947 is 10.076 acres.

ST. KITTS.

8. The rainfall for 1945 was 8 inches below the mean figure of the island over a period of thirty-two years and 6 inches less than that of the previous year. The 1946 reaping season was also exceptionally dry. Production amounted to 33,513 tons of grey crystals. Corresponding figures for the years 1943, 1944 and 1945 are shown with related statistics in Table II.

TABLE II.

Year	Production of Grey Crystals	Average Cane Yield Per Acre	Tons of Cane Per Ton of Sugar
1943 ..	32,161 tons	29.01 tons	8.25 tons
1944 ..	27,621 „	22.75 „	7.71 „
1945 ..	28,543 „	26.22 „	7.90 „
1946 ..	33,513 „	27.99 „	8.00 „

Figures supplied by the estates showed that 9,524 acres were harvested for the crop as compared to 8,580 acres in 1945. The average yields of cane per acre showed a slight increase, 27.99 tons as compared to 26.22 in 1945. The juice quality was not quite so good as in 1945—8 tons of cane being required to manufacture a ton of sugar. Final payments to cane growers were 29/9 per ton to contractors and 27/3 to non-contractors.

NEVIS.

9. There was a considerable increase in the tonnage of canes shipped to the St. Kitts (Basseterre) Sugar Factory, the figures being 1,698 tons as compared to 540 tons in 1945. It is estimated that in addition to this, 1,022 tons—compared to 600 tons in 1945—were manufactured into Muscovado sugar for local

consumption. The growers were paid 22/7 per ton for canes shipped to St. Kitts as compared to 19/1 per ton paid in 1945. It is expected that a better price will be paid for the 1947 crop which is estimated at 6,000 tons of canes.

Cotton

ANTIGUA.

10. The 1945-1946 crop was reaped from 1,113 acres and amounted to 282,502 lbs. of clean lint including 3,298 lbs. from Barbuda, and 3,702 lbs. stains: an acreage yield of 257 lbs. per acre. There was a greater freedom from insect pests and yields were good. Table III shows the 1945-46 production and yield per acre compared with the figures for the seasons 1939-40 to 1945-46.

TABLE III

Season	Acreage Planted	Clean Lint Produced	Lint Per Acre
1939—40 ..	2,645	416,393 lbs.	157 lbs.
1940—41 ..	4,826	659,376 „	136 „
1941—42 ..	4,197	416,274 „	99 „
1942—43 ..	896	73,530 „	82 „
1943—44 ..	988	124,732 „	127 „
1944—45 ..	1,129	189,992 „	170 „
1945—46 ..	1,113	282,502 „	253 „

The area planted for the 1946-47 crop is estimated at only 427 acres, due to uncertainty as to the question of markets and prices. The crop germinated well but early insect attacks indicate that yields will not be as high as in the previous season.

ST. KITTS

11. In this island there was a reduction in the acreage planted as compared to the 1945 season. On many estates the yields were very poor while on others satisfactory crops were produced in spite of the very dry weather. The total production of clean lint amounted to 147,195 lbs., and of stained lint to 12,217 lbs. The damage from insect pests was on a minor scale. Table IV shows the 1946 production compared with the figures for the seasons 1941—1945.

TABLE IV

Season	Acreage Planted	Clean Lint Produced	Lint per Acre
1941	1,400 acres	239,496 lbs.	171 lbs.
1942	1,530 „	139,862 „	92 „
1943	1,100 „	169,015 „	154 „
1944	342 „	47,560 „	139 „
1945	1,032 „	226,227 „	219 „
1946	860 „	147,195 „	171 „

NEVIS.

12. The acreage which was planted for the 1945-46 crop was considerably less than that of the previous season, 1,688 acres as compared to 2,680 acres. Production amounted to 196,328 lbs. of clean lint and 8,717 of stained quality. Table V gives production statistics during recent years.

TABLE V

Season	Acreage Planted	Clean Lint Produced	Lint per Acre
1940—41 ..	4,000 acres	518,242 lbs.	130 lbs.
1941—42 ..	4,500 „	579,148 „	129 „
1942—43 ..	2,573 „	186,081 „	72 „
1943—44 ..	2,544 „	287,892 „	113 „
1944—45 ..	2,680 „	296,685 „	111 „
1945—46 ..	1,688 „	196,328 „	116 „

ANGUILLA.

13. The acreage planted under cotton for the 1945-46 season was estimated at 60 acres, and production amounted to 4,040 lbs. of clean lint and 182 lbs. of stains. Table VI gives the production statistics during recent years.

TABLE VI

Season	Acreage Planted	Clean Lint Produced	Lint Per Acre
1940—41	150 acres	17,931 lbs	119 lbs
1941—42	225 „	29,357 „	130 „
1942—43	200 „	16,024 „	80 „
1943—44	70 „	4,343 „	62 „
1944—45	70 „	4,385 „	63 „
1945—46	60 „	4,040 „	67 „

MONTSERRAT

14. This island's production of clean lint amounted to 347,977 lbs. and of stained lint 16,828 lbs. (including 3,303 lbs. Second Grade lint) from an acreage of 2,521 acres, an average yield of 138 lbs. of clean lint. Production figures in recent years are shown in Table VII.

TABLE VII

Season	Acreage Planted	Clean Lint Produced	Lint Per Acre
1941	5,395 acres	1,128,724 lbs	209 lbs
1942	4,467 „	579,190 „	130 „
1943	4,005 „	611,752 „	153 „
1944	3,074 „	569,534 „	185 „
1945	3,770 „	514,349 „	136 „
1946	2,521 „	347,977 „	138 „

The total area planted was the smallest since 1933, and the causes for this may be attributed to (a) uncertainty at planting time as to markets and prices, (b) unfavourable weather conditions in many districts at planting time, (c) continued emigration of peasants. The planting season opened on March 1st, and weather conditions made the establishment of the crop rather difficult. In most parts of the island drought conditions prevailed throughout the main flowering and bolling periods. Table VIII shows the relative areas planted under various systems of tenure in 1946 and in recent years.

TABLE VIII

Season	Peasants Rented or Freehold land	Share-cropping	Estate Cultivation	Total
1941	2,340 acres	1,790 acres	1,265 acres	5,395 acres
1942	1,879 „	1,409 „	1,179 „	4,467 „
1943	1,673 „	1,297 „	1,035 „	4,005 „
1944	1,152 „	920 „	1,002 „	3,074 „
1945	1,726 „	982 „	1,062 „	3,770 „
1946	1,075 „	637 „	809 „	2,521 „

Limes and Lime Products

15. Exports of limes and lime products for 1946 and the previous seven years are set out in Table IX, together with annual totals expressed in terms of barrels of fruit. In calculating these annual totals 7½ gallons of raw lime juice were taken to represent one barrel of lime fruits and 1 lb. distilled lime oil was taken to represent three barrels of lime fruits. No conversion was made in respect of ecuelled oil, as this product is usually obtained from limes which are afterwards crushed for juice production. The strength of the small quantity of concentrated lime juice exported is not known, and for the present table the figure was converted on the same basis as raw lime juice.

TABLE IX

Year	Green Limes barrels	Raw Lime Juice gallons	Concentrated Lime Juice gallons	Ecuelled Oil lbs.	Distilled Oil lbs.	Total calculated as Limes barrels
1939 ..	93	66,772	—	2,052	177	9,527
1940 ..	361	39,787	—	9,81	468	7,070
1941 ..	406	55,373	—	1,124	877	10,420
1942 ..	99	*32,319	—	14	198	5,001
1943 ..	1	*42,309	—	1,562	378	6,776
1944 ..	15	49,548	—	814	555	8,286
1945 ..	3	36,572	—	593	299	5,776
1946 ..	16	24,062	60	601	487	4,693

* 32,319 gallons raw lime juice disposed of in 1942 comprises 22,859 gallons shipped and 9,460 gallons rum to waste.
* 42,309 gallons raw lime juice disposed of in 1943 comprises 20,309 gallons shipped and 22,000 gallons rum to waste.

Some 35,000 gallons of raw lime juice were awaiting shipment at the close of the year 1946, but even by taking this comparatively large quantity into account the figures indicate that the industry is scarcely maintaining its rate of production.

Trees continue to die out from obscure causes. The planting of budded trees continues.

Coconuts

NEVIS.

16. During the year 78,058 dry nuts were exported. There is no progress to report in this industry as growers are unwilling to make any effort to produce copra for export.

BRITISH VIRGIN ISLANDS.

17. During the year 69,979 nuts were exported.

Livestock

18. The situation with regard to numbers of livestock within the Colony continues to improve with the result that supplies of fresh meat are more plentiful. There is still, however, need for considerably more supplies of items such as fresh milk, poultry and eggs.

Weather conditions were less favourable than those of the preceding year, but livestock owners were still able to maintain the average standard of animal nutrition. However, it must be pointed out that very little significance is being attached to the value and need of improved pasture management and fodder conservation measures.

During the year a General Census was taken in which a section devoted to livestock in general discloses the following figures:

Cattle	*Sheep*	*Goats*	*Swine*	*Horsekind*	*Poultry*
18,595	11,699	15,884	5,878	2,989	66,274

Within the year, considerable interest has been displayed by a few livestock owners in the general improvement of breeds of livestock and improved conditions of husbandry. The several Presidential Departments are assisting by the provision of selected stud animals for breeding purposes, the distribution of young breeding stock and the demonstration of approved principles of animal husbandry and pasture management.

The Virgin Islands livestock industry maintained its export trade with St. Thomas, U.S. Virgin Islands, and regular bi-monthly shipments of livestock were made under the certification of the Department as required by the U.S. Authorities. The following table shows the exports for the year as compared to those of 1944 and 1945.

TABLE X

Year	Cattle	Sheep	Goats	Swine	Horse-kind	Poultry	Total Value
1944 ..	1,136	523	1,636	498	1	2,713	£ 19,100
1945 ..	1,147	394	1,714	453	1	3,186	19,866
1946 ..	1,178	367	1,682	364	45	3,218	21,859

The average standard of animal health throughout the Colony was maintained and there were no outbreaks of any of the serious infections and contagious diseases. The Chief Veterinary Officer reports in detail on animal diseases in his attached report and further comment on this aspect is unnecessary.

Food Production

19. As in the previous year, the Department continued to stress the importance of and need for local food production within the Colony, and the results may be summarized briefly as follows:—

ANTIGUA

It is estimated that the total acreage under food crops varied during the year from about 1,000 to 1,600 acres. The principal crops grown were corn, sweet potatoes, yams, cassava, peas and beans and tomatoes. The low rainfall in many districts contributed to a large reduction in the yields of corn and in some cases the entire crop was lost. The production of local cornmeal was limited due to the small amount of grain which found its way to the Corn Factory. In this connection, products such as cob-corn, cornmeal, cracked and shelled corn, and corn bran were produced to the extent of 74,000 lbs. During the year 52,450 lbs. of miscellaneous vegetables, chiefly potatoes, pumpkins and yams, and 7,853 lbs. of fresh fruit were handled at the Government Marketing Depot.

Limited shipments of tomatoes were made to Trinidad by small sailing craft as opportunities arose. Excellent reports were received as to quality and good prices were obtained.

ST. KITTS-NEVIS.

In this Presidency, all sugar estates were again required to plant and cultivate food crops on an area of at least 10% of the total acreage of sugar cane cultivation (approximately 1,000 acres). The production of these was affected by the very dry weather and as a consequence there was a seasonal availability of these products during the year. The Department's cornmeal plant was operated to a limited extent, and products such as cob-corn, cornmeal, cracked and shelled corn and corn bran to the extent of 24,000 lbs were produced.

MONTSERRAT.

Some estates cultivated comparatively small areas of food crops and peasants produced fair quantities. After the needs of the country districts had been supplied, the remainder offered for sale in the town markets was usually about equal to the demand.

VIRGIN ISLANDS.

As a result of extremely dry conditions prevailing during the first eight months of the year, local food production was considerably affected and supplies available were limited but still sufficient to meet home demands.

SECTION II

WORK OF THE DEPARTMENT OF AGRICULTURE

Investigational Work and Investigational Centres

MONTSERRAT

20. *Cotton Station.* The 1946 annual report of the Montserrat Sea Island Cotton Breeding Association has been prepared and submitted for publication to the Empire Cotton Growing Corporation. The breeding and seed multiplication programme was carried out on the same lines as in previous years, the Station continuing to serve as a central cotton breeding centre and depot for the Colony's seed supply. N.P.K. manurial trials were conducted on four representative soils of the island — Fresh Ash,

Brown Earth, Shoal and Alluvial, and Nitrogen was shown to be deficient on Trant's Alluvial soil. Preliminary trials with SODIUM SELENATE to determine the rate and effectiveness of application in controlling insects without affecting the plant, and then to use this method to determine the most suitable date of planting, have been set up at the Grove Station.

21. *Grove and Brades Stations.* These stations, including stud centres, were used for the production of food and fodder crops on a mixed farming basis, for the demonstration of soil conservation measures, and as a nursery for planting material of proved varieties of various crops. The Stud services during the year were as follows :—

Bulls	*Boars*	*Ram Sheep*
115	42	59

ANTIGUA

Greencastle Experiment Station

22. As the development of the Central Experiment Station proceeds the purely experimental work at Greencastle is being correspondingly reduced. It is considered necessary, however, to carry on a certain amount of experimental work on this particular soil type (which is not present in the region of the new station), and the area is one of the few in Antigua which is suitable for fruit growing. As a stream which is never quite dry, even in severe droughts, runs through the property, the site is also well suited for nursery work. The area is therefore being organized to serve principally as a Fruit Farm and Nursery.

Sugar cane nursery work was confined to the maintenance and extension of varieties already established and to the first multiplication of the following new varieties received in May and June :— B4306, B4227, B4362, B4363, B4380, B4381, B43139, B43214, B43218, B43229, B43234, B43235, B43253, B43255, B43337, B43391 B43398, B43403, B43413.

23. Budding of mangoes, citrus and avocado pears was continued but outside distributions were few, as the majority of plants were used to extend the orchard area within the Station itself. Distribution of forest trees and ornamental plants showed an increase over 1945.

24. Small scale observations were carried out with "Methoxone" and "Standag" weed-killers applied at the rate of 9 lbs. per acre. These observations indicate that a number of common weeds are killed outright by one application, and nut grass is seriously affected. Further trials are necessary to establish whether the "nuts" of this weed can be killed by one or more applications to the vegetation above ground.

25. A trial with a—napthalene Acetic Acid plant hormone (1 cc. bottled solution in 150 cc. water) on Bougainvillaea cuttings resulted in the treated cuttings rooting more rapidly and growing more vigorously than similar cuttings untreated.

26. In addition to the above centres, investigational work was carried out at (a) The Central Experiment Station, Antigua (b) Agricultural Station, Bayfords, St. Kitts (c) Agricultural Station, Virgin Islands. A report on this work is included in the sections dealing with Development and Welfare Schemes.

Sugar Cane Investigation

27. As in the preceding year, the extensive investigational programme with sugar cane was continued both in Antigua and St. Kitts.

IN ANTIGUA.

The following experiments were reaped :—
Varietal 20, Varietal Observation 11, Cultural 9, Manurial 4.
The following were laid down for reaping in 1947 :—
Varietal 1, Cultural (spacing interval) 1, Manurial 1.
The following were laid down for reaping in 1948 :—
Varietal 8, Varietal Observation 5, Time of planting and Varietal 4, Time of planting and Manurial 1, Manurial 4.

IN ST. KITTS.

28. The following experiments were reaped :—
Varietal 19, Cultural 6, Manurial 3.
The following were laid down for reaping in 1948 :—
Varietal 12, Manurial 1.

ANTIGUA

29. The results of these experiments were summarized and published. The variety B4098 was outstanding as a plant cane but has not yet been reaped as a ratoon. It was recommended that small areas under this variety be planted on all estates so as to provide ample planting material should its performance as a ratoon be satisfactory. In the meantime the general planting recommendations with respect to the 1946—48 crop covers the varieties B34104, B37161, B37172 and is summarized in the following table :—

ECOLOGICAL AREA	PER CENT OF TOTAL AREA		
Soils of Good Natural Drainage	B.34104	B.37161	B.37172
Wetherell Clay	100%	—	—
Fitches „	—	100%	—
Wilis Freemans Transitional	—	100%	—
Lighter Soils of Blubber Valley Series	30%	30%	40%
Soils of Poor Natural Drainage			
Gunthorpe Clay	30%	60%	10%
Tomlinson „	20%	60%	20%
Lindsey „	—	90%	10%
Otto „	25%	50%	25%
Bendals „	25%	25%	50%
Heavier Soils of Blubber Valley Series	30%	30%	40%

30. With respect to cultural and manurial methods, the following are the summarized results and recommendations :—

Spacing Intervals. — Results in 1946 confirmed those of 1944 and 1945 and indicated that a spacing interval of 6′ x 2′ or 6′ x 2½′ might safely be adopted without loss of yield.

Manurial Experiments. — On Fitches, Gunthorpe and Otto Clays, dressings heavier than 2 cwt. Sulphate of Ammonia and 1 cwt. Superphosphate per acre were found to be ineffective. On Blubber Valley Sandy Loams, however, gains were found to result from increasing dressing of Sulphate of Ammonia up to 5 cwt. per acre, especially in the presence of 1 cwt. to the acre of basal Superphosphate.

ST. KITTS

31. The results of the experiments were summarized but are not yet published due to a delay in printing. The following recommendations were made with regard to varieties for planting :—

Drier Lower Lands. Untitl further information is available with respect to newer varieties it is recommended that B3439 should be grown on those areas of the dried lower lands which are to be reaped both as plants and ratoons during the first month of the crop season. B37161 should be planted for reaping during the remaining months of the crop season. B37161 should also be planted in all areas where B3439 is known to uproot, whether reaping is to be early or late.

Lower Lands of Intermediate Rainfall. Until further information is available, the lower lands of intermediate rainfall should be planted mainly in B37161. As the middle lands are approached this variety should be replaced to some extent by B34104.

Middle Lands of Intermediate Rainfall. It is recommended that the middle lands of intermediate rainfall should be planted mainly in B37161. Some B34104 should be planted in areas with a deep top soil where arrowing is least likely to limit cane growth. Some B35187 may also be planted in this area.

Wetter Middle Lands. It is recommended that the wetter middle lands should be planted mainly in B37161 Some B34104 might be planted in areas with a deep topsoil where arrowing is least likely to limit cane growth. Small areas might be planted in B38212.

Wetter Upper Lands. Until further information is available both B37161 andB34104 should be planted on the wetter upper lands. The planting of B35187 is not recommended except on a very small scale.

32. With respect to manurial and cultural methods, the following are the summarized results and recommendations :—

Manurial Experiments. The results of the trials with Sulphate of Ammonia and Nitrate of Ammonia show that as plant canes there was a significant gain in yield of sulphate of ammonia over ammonium nitrate and over no-nitrogen plots in one experiment only. In all other experiments there was no significant difference between no-nitrogen, ammonium nitrate and sulphate of ammonia plots. As first ratoons both manures gave large increases over the no-nitrogen plots. There was no significant difference in yield between the sulphate of ammonia and ammonium nitrate plots.

Routine Tillage. As in previous years no immediate or cumulative gain in yield has been found to result from the routine tillage (as distinct from weeding) of plant and ratoon canes. It is recommended that if the practice of routine tillage is to be continued the implements used should be specially designed for weeding purposes and to fill the furrows rather than to till the banks.

Spacing. No definite results have yet been obtained from the changing of banks to 5 and 6 ft. widths and of the spacings in the rows. These spacings are being tried to facilitate the possible future use of rotary hoes.

33. Cuttings of the following new varieties were received from the Plant Quarantine Station, Trinidad, in May :— B4306; B4327; B4381; B43214; B43218; B43229; B43234; B43235; B43253; B43255; B43330; B43337; B43391; B43398; B43403; B43413; B4362.

EXTENSION SERVICES

34. As in the preceding year, the Extension Services of the Department were maintained, such services including :— (a) general assistance with Committees and Societies (b) work in connection with Land Settlement and Peasant Agricultural Development carried out principally through Settlement Councils. In addition, officers of the Department assisted with the work of such Boards as the Cotton Growers Associations in the various Presidencies, Rural District Boards, Village Councils. Other activities included the assistance in measures such as soil conservation and mixed farming demonstrations on peasant owned lands and in the organisation of Agricultural Shows. The officers of the Department also presented papers for discussion at meetings of the Agricultural Societies both in Antigua and in St. Kitts, and for publication in the press. In Nevis, a "Letter of Advice" to farmers was published monthly and posted throughout the island. The "Settlement Councils" in Antigua and "Land Settlement Committees" in St. Kitts continued to serve a most useful purpose in advising on land settlement affairs. The need for continued and increased food production was stressed and its importance pointed out to the peasants especially through the agency of the Agricultural Instructors and Demonstrators.

35. Peasant Land Settlement schemes were maintained in Antigua, St. Kitts-Nevis and Montserrat.

ANTIGUA

Twenty-four (24) settlement areas with a total acreage of 11,427 acres were being developed under the control of the Department or/and the Land Settlement and Development Board (See Development & Welfare Scheme D282. Land Settlement & Development Board, Antigua). On these areas, during the year, soil and water conservation measures were carried out; considerable repairs, alterations and additions were made to buildings on the settlements; water catchment and storage facilities improved; three hundred and fifty (350) acres of wooded or bush land was cleared and preparation for economic use commenced; and several hundred acres of settlement land were more intensively cultivated than previously.

Demonstration areas and Stud centres were maintained both in Antigua and Barbuda, and cane nurseries and vegetable seedling depots were operated. As a general principle, demonstrations on Government Plots are being reduced to a minimum and such work on selected peasants' plots, with the peasant's assistance and collaboration, increased. The services of various stud animals were also available and 45 bull, 135 boar, 20 jack (donkey breeding) 45 jack (mule breeding) and 23 ram services were recorded.

ST. KITTS-NEVIS.

The demonstration allotments on the two existing settlements in St. Kitts continued to provide useful demonstrations for settlers, and work on soil conservation measures was continued. Stud animals such as bulls and boars were maintained at these centres and their use encouraged. In Nevis, ten (10) estates have been purchased by Government for land settlement and there is still a demand for more holdings. It can be said that on the whole peasants are well satisfied with conditions prevailing on these settlements, and now that the prices of cane, cotton and livestock have increased, a satisfactory improvement of their economic condition can be expected. Stud animals, including bulls, jacks, boars and rams and buck goats were maintained at the various settlements.

MONTSERRAT.

The development of the Otway Estates as a peasant settlement continued. Holdings laid out on the contour have been allocated to some 290 settlers to whom instruction was given in soil conservation measures, crop rotation and mixed farming practices.

Marketing and Credit Facilities

36. The service and facilities maintained by the Department operated along similar lines as obtained in the preceding year. Officers of the Department acted as agents for the Ministry of Supply in the purchase of the cotton crops in St. Kitts and Montserrat, and for the purchase and sale of the crops in Antigua and Nevis to buyers in the U.S.A. In Antigua, there was a marked increase in the tonnage of peasants' canes handled by this section, 14,558 tons as compared to 8,008 tons during 1945, and 7,177 tons in 1944. In St. Kitts and Nevis, the marketing of allottees' canes on the settlements was carried out by the officers of the Department. In Antigua and Montserrat, small shipments of vegetables, principally tomatoes and carrots were made through this section, but lack of suitable transportation at the moment, debars the exploration of this market. The processing of corn into cornmeal was carried out in Antigua, St. Kitts, Nevis and Montserrat, but in all cases the amounts available were in short supply. Credit facilities were available as before for (a) cultivation (b) fertilizers (c) purchase of livestock (d) agricultural implements (e) housing. Such loans as are recommended are carefully supervised by field officers, being issued and collected in most cases through the Marketing section.

Soil Conservation

37. A separate report on this section has been already prepared at the request of the Secretary of State and submitted.

COLONIAL DEVELOPMENT AND WELFARE SCHEMES

38. Schemes under the above Act and under the direction of the Department have not been included in the previous sections and are considered separately as follows:—

LEEWARD ISLANDS.

The following schemes are being operated under the Federal Estimates:—

Scheme D32. Appointment of Director of Agriculture, Leeward Islands Scheme D27. D27(A). Chief Veterinary Officer, Leeward Islands. Both of these schemes consist of free capital grants for the maintenance of the above posts on a Colony basis. The Director of Agriculture proceeded on overseas leave on May 4th, 1946, and was subsequently appointed Agricultural Adviser on the Staff of the Comptroller, Development and Welfare in the West Indies. The Chief Veterinary Officer acted as Director of Agriculture from May 5th to December 31st, 1946. The post of Chief Veterinary Officer was also maintained during the year.

*Scheme D*13. *Agricultural Shows.* This scheme consists of a free capital grant of £360 over a three year period, from which funds are allocated annually to the various Presidencies for assistance in the organisation of Agricultural Shows and the award of suitable prizes for the various competitive classes. The third annual show was held in Barbuda which was considered up to the standard of the previous year in the quality of the exhibits.

*Scheme R*54. *Control of Insect Pests on Food Crops.* This scheme provides for the employment of an Entomologist for the investigation of food-crop insect pests of the Leeward and Windward Islands Colonies. The Entomologist was stationed in Antigua until early March when work consisted chiefly in field investigations into the efficacy and costs of different types of insecticides on a range of crops, together with preliminary tests of plant hormones as an auxiliary factor to promote thriftiness of food crop plants. The Officer proceeded on overseas leave on April 6th—July 6th, and returned to Grenada, Windward Islands, where he proposes to establish headquarters for the remaining duration of the Scheme, and to establish a small laboratory and store room. At the request of the Government of the Gold Coast and with the permission of the Secretary of State the officer left the West Indies and proceeded to West Africa in the middle of September.

*Scheme D*333 (*c*). *Training Junior Personnel Outside the West Indies* The grant under this scheme was continued during the first quarter of the year only, as the training at MacDonald College, Quebec, Canada, of the former member of the Department, Mr. F. Willock, was completed. The candidate successfully passed the second and final years of the Diploma Course in Agriculture, Animal Husbandry Option, with first class honours.

ANTIGUA.

39. *Scheme D27, D27 (A). Veterinary.* This provided for the appointment of a veterinarian, on a part time basis, to carry out the duties of meat inspector in the Public Market, St. John's, which service was maintained during the year. Two (2) additional dipping tanks for the control of ticks were constructed during the year, and regular bi-monthly dipping of livestock was maintained at these tanks. Reference is made in the Veterinary section of this report as to numbers of animals passed through these dips.

Scheme D49. Forestry. The position with respect to the work carried out under this scheme during the year did not vary much from 1945. A forestry protection service was maintained throughout the year. The teak plot at Greencastle Experiment Station continued to make excellent progress, but as already observed those on more shallow hill lands grew very slowly.

Scheme D202. Clerical Staff — Department of Agriculture. Under this scheme, provision is made for the employment of an adequate clerical staff for the Department of Agriculture, which service was maintained during the year

Scheme D57. Agricultural Development. The work under this scheme which provides mainly for field and marketing undertakings as related to peasant agricultural development was continued during the year. Further repairs, additions and alterations were made to country marketing depots as well as to peasants' cottages on settlements. The scheme also provides for the salaries of certain officers who administer the above activities.

Scheme D282. Land Settlement and Development Board. Under this scheme, a Land Settlement and Development Board was appointed in March 1945, with a policy directed towards the retention of ownership of all agricultural land which comes into its possession and the control of the development of such lands under a system of leasehold with security of tenure to suitable tenants. During the year specific legislation was passed giving executive powers to this Board and as a result a full and comprehensive report on the year's progress will be prepared by the Secretary and submitted as a separate document.

Scheme D465. Agricultural Development. This comprehensive scheme for agricultural development provides financial assistance for

(1) Establishment of a Central Experiment Station.
(2) Staffing and other requirements of the Agricultural Department.
(3) Rehabilitation of Estate Agriculture.

(1) Central Experiment Station

General.

Work at the Experiment Station, which covers an area of approximately 600 acres, was mainly of a developmental nature, the major activities being the erection of farm buildings, the conservation of water, the clearing of forest and scrub land areas for crop utilisation and pastures, the fencing of livestock paddocks, and the nuclear establishment of foundation herds of cattle and sheep. Grass and fodder experiments were conducted and progress was made with the establishment of a new cane nursery area and the preparation of land for cane manurial experiments. The area under food crops was considerably extended, 65 acres being under grain, pulse, root and vegetable crops by the end of the year.

Land Usuage.

The following table shows the agricultural land utilization of the Station at the end of the year and an estimate of future land requirements necessary for the full development of the scheme :—

Utilization	Area already developed Acres	Estimated total area required Acres	Remarks
Cane nurseries and Experiments .	8	25	Food crops, mainly corn, grown for Station livestock. Cotton crops in rotation with food crops and green dressing crops. 60 acres of cotton will be grown annually as a main season crop.
Food crops and cotton crop seed area	64	90	
Food crop experiments	—	6	
Vegetable garden	1	2	
Fodder crops	20	40	On various soil types
Pasture paddocks	79	134	
Pasture grazing experiments ..	—	16	Based on carrying 150 head cattle, 30 sheep and 7 horses.
	172	313	

Buildings.

Building operations were stopped during the latter part of the year pending approval of a revised and restricted building programme.

The following buildings, which are stone or concrete-block structures with galvanized or shingled roofs, have now been erected :—

(1) Main offices, containing lecture room and library, veterinary laboratory and a surveyor's workroom.
(2) Implement shed with engineering shop attached
(3) Storeroom
(4) Stables for 4 horses
(5) Bull shed with concrete floored paddocks for two bulls
(6) Two workers' cottages
(7) Reconstructed and renovated Manager's house

Three cattle shelters, one sheep pen and one bull service pen, all timber buildings with galvanized roofs, were erected in the pasture paddocks.

Water Supplies

A 60,000 gallon concrete tank, sunk to ground level, was built during the year to receive rain water from the farm buildings catchment area and overflow water from a 32,000 gallon stone-built tank serving the main office buildings. It is estimated that when the Experiment Station is fully developed the annual water requirements will be about 830,000 gallons. To meet this requirement there are at present on the estate two ponds which, together with the two water-storage tanks mentioned above, are estimated to give 700,000 gallons in a year of average rainfall. This gives a shortfall of 130,000 gallons, which will have to be met by the building of more storage tanks and increasing the hill catchment area which serves the main pond. A plan to this end has been drawn up and is designed to synchronize with a gravitation water feeding system supplying troughs in cattle paddocks over an extensive area of the estate and to the farm buildings.

Fencing and Enclosing Property.

Approximately 8 miles of fencing wire has now been erected on the Station and has been used chiefly in enclosing pasture paddocks. Fourteen pasture and fodder paddocks, covering an area of 88 acres, have now been securely fenced.

Food Crops.

Towards the end of the year, 65 acres of land had been prepared and planted under the following crops :—

Maize	.. ..	49.25 acres
Pulses	.. ..	8.90 „
Roots	.. ..	5.70 „
Groundnuts	.. .. ..	.25 „
Vegetables	.. .. ..	.90 „

The earlier plantings of maize were badly attacked by Smut (Zea ustilago) but later plantings were relatively free of this fungus. Yields averaged about 1,200 lbs. cob-corn to the acre.

Of the pulses grown, cowpeas yielded very poorly as a result of repeated caterpillar attacks and in spite of several sprayings of insecticide. Frequent rain showers, no doubt, were mainly responsible for the ineffectiveness of the D.D.T. insecticide used. Sweet potatoes (B.44) gave results varying with the seasonal time of planting and effective rainfall during the growing period. The highest yield recorded was 5 tons per acre.

A small plot ($\frac{1}{4}$ acre) of the Spanish Bunch type of groundnut was planted towards the end of October on comparatively heavy land (Gunthorpe clay soil series dominant), and although the crop is not yet harvested very promising results seem assured. The crop was planted on the flat in 18″ wide drills with seed 9″ apart on the drills. Small 3″ high ridges were later built up when the foliage was a few inches above the soil. A few weeks after planting an almost complete vegetable canopy covered the land reducing weed growth to a minimum and maintaining the soil in a friable moist condition during a dry period. This desirable condition of the land later permitted easy penetration of the flowers into the soil a most important factor for successful groundnut culture on heavy lands.

A vegetable garden area was planned and partly established near the main pond on the Station. When the water supply system is completed it is intended to experiment with all the year round gardening. Considerable amounts of vegetables, tomato and onion seedlings were sold to the general public.

Investigation and experiment in food crops is a matter which will require serious attention at the Experiment Station and steps are being taken to undertake such work at an early date.

Cattle.

The development of the Red Poll x Senegal herd continued through the year and now comprise the following numbers :—

Cows	*Heifers*	*Bulls*	*Heifer Calves*	*Bull Calves*	*Total*
11	12	2	7	2	34

These animals continue to accommodate themselves favourably to local conditions and careful observations are being made on their growth, development, heat resistance powers, food requirements and fertility. It is hoped during 1947 to be able to initiate observations and recordings on their milk producing properties. In addition to the above herd, it was originally planned to establish another of grade Holstein blood by using an imported pure bred bull of this type and selected native foundation cows. In view, however, of financial restrictions likely to be imposed on the Station development scheme, it has been considered advisable to modify the cattle breeding programme by eliminating the formation of this herd. However, in this connection, it is proposed to carry out observations on the progeny of such a cross by maintaining both pure bred and high grade Holstein sires at the Station for use on privately owned native cows.

Horsekind.

The imported French Canadian light draught stallion, "Cemolon de Cap Rouge" has proved to be popular at stud and a total of thirty-seven (37) mares were served during the year. An imported mare of the same type "Nelly de Bagot", imported while in foal, having been bred to a well known stallion in Canada, dropped a colt foal, which was developed very satisfactorily and promises to be a very desirable example of this breed. The other brood mares on the Station, in addition to "Nelly de Bagot", were all bred to the stallion and should foal during 1947.

The imported American jack "Dan Kiger" was a stud during the year and is being used both on native mares and selected janets for improved donkey breeding.

Sheep.

Considerable progress was made with the establishment of the flock which was commenced during 1945 by the local purchase of varying grades of Black Head Persian and native ewes which were bred to a very high grade Black Head Persian ram. The programme is based on the breeding of an animal to incorporate the good mutton qualities of the Black Head Persian but still retain the prolificacy, hardiness and virility of the local sheep. Accordingly, it is proposed to establish numbers of varying Black Head Persian grades in an effort to determine the type of grade which will produce these characteristics. The numbers of the flock at the end of the year were as follows :—

Type	Rams	Ewes	Ram Lambs	Ewe Lambs	Total
Native	—	9	2	2	13
15/16 Black Head Persian ..	1	—	—	—	1
¾ " " " ..	—	5	—	—	5
½ " " " ..	1	5	1	7	14
	2	19	3	9	33

During the year, six (6) ram lambs and one ewe lamb were sold—of these one ewe lamb and two rams (3/4 Black Head Persian) were sent to the Agricultural Department, Virgin Islands.

Stud Services.

The following were recorded during the year :—

Stud Animal	Date of Availability	No .of Services
French Canadian Stallion "Cemolon de Cap Rougue" ..	9. 3. 46	37
American Jack "Dan Kiger" ..	11. 2. 46	15
Pure-bred Holstein Bull "Ghandi"	22. 10. 46	2
High Grade Holstein Bull "Don Q"	8. 7. 46	27

Grass Experiments.

Five experiments are being conducted to determine the comparative yields of Elephant grass (Pennisetum purpureum), Guinea grass (Panicum maximum), Guatemala grass (Tripsacum laxum), and Uba cane (Saccharum sinense) under variable treatments of manuring and spacing.

This report covers results obtained during the first year of the experiments. It is hoped to continue the experiments for a further period of years when final significant results may be determined.

Details of the experiments are as follows :—

A. VARIETAL EXPERIMENT.

Commenced: 11/10/45.
Lay out: Two 4 x 4 Latin squares.
Plant propagation: Elephant grass, Guatemala grass and Uba cane by cuttings. Guinea grass by root divisions.

Spacing: 3′ x 2′
Duration of experiment : 352 days
Rainfall during period of experiment: 44.12 inches.
Manurial treatment: Basal application of 2 cwt. Sulphate of Ammonia and 1 cwt. Superphosphate per acre applied to plants and repeated after each reaping.
Size of plots: 1/67.2 acres.

Grass	No. of times reaped	Yield per plot in lbs.	Yield per acre in tons	% loss or gain in yield between 1st and final reaping Loss	Gain	Total amount fertilizer applied Rate per acre
Elephant ..	4	10,844	40.6	5.8		(8 cwt. Sulphate (of Ammonia &
Guinea ..	4	6,297	23.6		17.2	(4 cwt. Super- (phosphate
*Guatemala ..	3	5,949	22.3	47.8		(6 cwt. Sulphate (of Ammonia &
Uba	3	3,945	14.8	85.3		(3 cwt. Super (phosphate.

*Difficulty .. .. grasses.

B. VARIETAL AND MANURIAL.

Commenced : 23/10/45.
Lay out : One 4 x 4 Latin square with half plots.
Plant propagation : As in experiment A
Spacing : 3′ x 2′.
Duration of experiment : 346 days.
Rainfall during period of experiment : 39.83 inches.
Manurial treatment : 2 cwt. Ammonia nitrate (rate per acre) applied to half plots. First application to plants similar applications repeated after each cutting.
Size of plots : 1/50.4 acres.

Grass	No. of times reaped	Plot Manured half lbs.	Yields Unmanured half lbs.	Yield per acre Manured tons	Unmanured tons	% loss or gain in yields between 1st and final reapings. Manured Loss	Gain	Unmanured Loss	Gain	Total amount of fertilizer applied Rate per acre
Elephant	4	7,024	6,256	39.5	35.2	46.35		58.3		(8 cwt. (Amt. nit.
Guinea ..	4	4,662	3,820	26.2	21.4	23.50		44.8		
Guatemala	3	3,420	3,205	19.2	18.0		9.3		2.53	(6 cwt. (Am. nit.
Uba ..	3	3,326	3,104	18.7	17.5	24.55		30.0		

C. MANURIAL EXPERIMENT WITH ELEPHANT GRASS.

Commenced : 29/10/45.
Lay out : Two 4 x 4 Latin squares.
Plant Propagation : By cuttings.
Spacing : 3′ x 2′.
Duration of experiment : 416 days.
Rainfall during period of experiment : 55.75 inches.
Manurial treatment : Manures applied to plants soon after establishment and to ratoons after each cutting.
Size of plots : 1/50.4 acres.

No. of times reaped	Nil lbs.	tons per acre	N. lbs.	tons per acre	P. lbs.	tons per acre	N.P. lbs.	tons per acre
4	10,214	28.7	14,450	40.6	10,151	28.5	15,219	42.8

Rate per acre of manures applied at each application.
Nil—No manure, N—2 cwt. Sulphate of Ammonia, P—1 cwt. Superphosphate, N.P. — 2 cwt. Sulphate of Ammonia and 1 cwt. Superphosphate.
Total amount of manures applied per acre.
Nil—No Manure, N.—8 cwt. Sulphate of Ammonia, P—4 cwt. Superphosphate, N.P.—8 cwt. Sulphate of Ammonia and 4 cwt. Superphosphate.

Whilst these experiments have not yet been completed it might be noted at this stage that the lack of response to phosphate when applied alone is marked.

D. MANURIAL EXPERIMENT WITH GUINEA GRASS.

Commenced : 11/1/46.
Lay out : One 4 x 4 Latin square.
Plant Propagation : Root divisions.
Spacing : 3′ x 2′
Duration of experiment : 330 days.
Rainfall during period of experiment : 42.23 inches.
Manurial treatment : As in experiment C.
Size of plots : 1/82.5 acres.

No. of times	Nil. lbs.	tons per acre	N. lbs.	tons per acre	P. lbs.	tons per acre	N.P. lbs.	tons per acre
4	1,824	16.8	2,714	24.9	1,848	17.0	3,084	28.4

As in the case of the manurial experiment with Elephant grass the lack of response to phosphates alone is again very noticeable.

E. SPACING EXPERIMENT WITH ELEPHANT GRASS.

Commenced : 19/1/46.
Lay out : One 4 x 4 Latin square.
Plant Propagation : Cuttings.
Spacings : A 2′ x 4′ (5,450 plants per acre)
B 2′ x 3′ (7,270 „ „ „)
C 2′ x 2′ (10,900 „ „ „)
D 2′ rows continuous planting.
Duration of experiment : 321 days.
Rainfall during period of experiment : 41.36 inches.
Manurial treatment: Basal application to ratoons only of 2 cwt. Sulphate of Ammonia and 1 cwt. Superphosphate per acre. The total amount of manures applied at rate per acre during period of experiment was 4 cwt. Sulphate of Ammonia and 2 cwt. Superphosphate.
Size of plots: 1/50.4 acres.

No. of times reaped	A 2′ x 4′ lbs	tons per acre	B 2′ x 3′ lbs	tons per acre	C 2′ x 2′ lbs	tons per acre	D Continuous lbs	tons per acre
3	5,609	31.5	5,364	30.2	5,356	30.1	4,919	27.6

SUGAR CANE EXPERIMENTS.

Observation Experiments.

1. *Field* 11 and 12 Friar's Hill, Gunthorpe Clay.
Lay out — Three Randomised Blocks with 10 varieties in each
Plot area — 480 sq. ft. — 1/90.8 acres (40 stools).
Varieties — 1. B37161 6. B 4145
2. B 4098 7. B42114
3. B37172 8. B 4226
4. B41211 9. B42279
5. B41227 10. B42231
Planted — 5/11/46.
Germinations — Good in all varieties.

2. *Field* — No. 9 Dunbars. Wetherell Clay.
Lay out — Three Randomised Blocks with 10 varieties in each.
Plot area — 540 sq. ft. 1/80.8 acres (30 stools).
Varieties — 1. B37161 6. B4145
2. B34104 7. B42114
3. B 4098 8. B 4226
4. B41211 9. B42279
5. B41227 10. B42231
Planted — 7/11/46.
Germinations — Good in all varieties except B42279 which was later established.

3. *Field* — No. 5 Dunbars. Fitches Clay.
Lay out — Three Randomised Blocks with 10 varieties in each.
Plot area — 1/80.8 acres (30) stools.
Varieties — 1. B37161 6. B 4145
2. B37172 7. B42114
3. B 4098 8. B 4226
4. B41211 9. B42279
5. B41227 10. B42231
Planted — 18/11/46.
Germinations — Good in all varieties.

Spacing Demonstration.
Field 11 and 12 Friar's Hill. Gunthorpe Clay.
Lay out — 5 plots with different spacing in each as follows :—
1. 4′ x 4′
2. 4′ x 3′
3. 4′ x 2′
4. 3′ x 3′
5. 3′ x 2′
Plot area — 1/56.7 acres (32′ x 24′)
Planted — 5/11/46.
Germinations — Very good — 98%.

(2) Staffing and other Requirements of the Agricultural Department.

Under this grant it was possible to provide for the increased staff needed in connection with the several Developmental Schemes and for the financing of demonstrations, etc., connected primarily with land settlement projects.

(3) Rehabilitation of Estate Agriculture.

Under this scheme free grants and loans have been provided and sanctioned for (a) the purchase of agricultural machinery and implements, (b) facilities for transport, (c) the purchase of livestock and certain estate improvements connected with the development of dairy farming. Funds for these purposes are administered by a Committee under the chairmanship of the Director of Agriculture. At the end of the year the following allocations had been made under the respective subheads:—

Purchase of Agricultural machinery	£ 3,408
Livestock and Dairy Development	480
Estate Improvements	6,282
	£10,170

ST. KITTS

Scheme D288. **Government Dairy and Agricultural Station.**

40. The building programme at this Station was almost completed during the year, the remaining features being the adaptation of the present cow shed into a milking bail and milk room.

Pasturage—Fodder Crop Development.

The very dry conditions during the year served to demonstrate the insufficiency of pasturage and fodder crops at the Station, especially in relation to the increased number of animals. Accordingly, with the building programme completed, a plan of work for extended pasture and fodder crop development was drawn up and a start made during the month of December, but there still remains a large acreage of bushland to be cleared, fenced and planted with grass crops.

Livestock Development.

The breeding of the native foundation cows to a pure bred Holstein sire continues in a programme aimed towards the primary establishment of a ½ grade Holstein herd for observation and study as to their ability to produce fair quantities of milk under local conditions. Further experiments will also be carried out in the top-crossing of this first generation with another Holstein sire and the comparison of the performance of the higher grades thus produced. During the year fourteen calves (11 heifers and 3 bulls) were sired by the pure bred Holstein out of native foundation cows, and these show considerable promise.

It was decided to dispose of several of the native foundation stock as being of undesireable type for further breeding as well as those of questionable fertility. Another major change at the Farm was the cessation of the sale of fresh milk as at the end of 1946, it being considered that all cows should be allowed to nurse their calves so as to ensure the establishment of a healthy and hardy first generation animals, rather than to attempt to supply small amounts of milk at a time when the herd establishment did not warrant this provision.

The numbers at the end of the year are as follows :—

Bulls	*Native Cows*	*Bull Calves*	*Heifers*	*Total*
2	31	4	32	69

During the last quarter of the year a ¾ grade Holstein bull was at stud to non-Station cows, nine services were recorded during this period.

Horses

The English Thoroughbred stallion "Hamoa" stood at stud during the year and twenty-one (21) mares were served. Four foals, sired by this stallion were born at the Station during the year, two colts and two fillies. During the year there was a reduction in the number of brood mares and foals being kept at the Station and it was decided to retain one mare and one filly for breeding purposes.

Pigs

Both the Canadian Berkshire and Duroc-Jersey breeding units were maintained. Thirty-two piglets of the former breed were born and twenty-eight reared, while fifty-three of the latter were born and forty-nine reared. The majority of these young pigs were distributed within the Presidency and to Agricultural Stations within the Colony. Observations so far, show that the Canadian Berkshire appears to be a more suitable type for the local conditions and there is a definite preference displayed by breeders for this breed over the Duroc-Jersey.

Poultry.

The establishment of the Rhode Island Red unit continued during the year, with the culling of undesirable types. Daily records are kept on egg production and although this is not on the high side, there was a reasonably good supply of eggs for hatching throughout the year. A small number of replacements, principally pullets, are raised and it is proposed during the coming year to set up selected breeding pens for further replacements. It is regretted that Avian Leucosis has made its appearance in the flock and there were seven deaths due to this cause.

Scheme D114. **Agricultural Development in St. Kitts.**

This scheme which provided for the posts of two junior Agricultural Instructors in connection with soil conservation measures on land settlement areas, terminated at the end of the year. Provisions have been made in the Presidential 1947 estimates to continue this work.

Scheme D422. **Government Veterinary Service in St. Kitts.**

This scheme provides for such a service organised on the panel system with a fixed rate of fees for panel and non-panel contributors, which has been in operation since 1st March, 1945. The following brief report on the workings of the scheme was prepared by the resident Veterinary Officer who is administering the service :— "It was indicated in last year's Report that it was too early to appraise this venture into the field of socialized Veterinary Medicine. Veterinary Science, it may be observed, in many of its aspects has always been

socialized and there is a growing tendency to-day in progressive livestock countries to extend, in the interests both of the livestock industry and of the profession, the socialization and/or subsidization of Veterinary Services. Now, after two-years' application of the Government Veterinary Service Scheme, some conclusions are being reached regarding the value and practicability of the project under local conditions.

In the general absence of devastating animal diseases in this Colony, the writer subscribes to the view that the greatest contribution Veterinary Services can make to the progress and advancement of the community lies in the big field of Livestock Improvement, envisaging the establishment of a small but virile livestock industry which should not only make more readily available locally certain essential animal products but which should permit the development of organized livestock exports to the larger West Indian islands.

As mentioned more than once in this Report, St. Kitts is essentially a Sugar island and there is, at present, no indication of departure from the one-crop system of agriculture prevailing. No livestock industry, as such, exists in St. Kitts, nor, under present conditions, does any appear likely to develop as the importance of livestock in the agricultural economy — specialized though it be — is not generally conceded. The maintenance of Health in sugar-estate draft animals which, incidentally, are being steadily replaced by mechanical power, should not be, in the writer's opinion, the primary or even a very important function of any scheme of State Veterinary Medicine.

Under conditions obtaining in St. Kitts and in the absence of funds for livestock improvement in Nevis, the potentialities of the project—not inconsiderable under other circumstance — are, therefore, greatly curtailed.

As regards Scheme details, it is regrettable that the Veterinary Office and Laboratory provided for in the Scheme has, up to the present, failed to materialize

At the close of 1945, the first year of the Scheme, a large contributor to the panel resigned. At year's end (1946), there were eleven (11) estates contributing to the panel and a total panel registration (estates and others) of 796 animals classified as follows :—

Year	No. of Estates	Kind of Animal							
		Horses	Mules	Donkeys	Cattle	Sheep	Goats	Swine	Total
1945 ..	20	136	208	19	1,107	2	—	—	1,472
1946 ..	11	71	120	5	581	—	—	—	
1946 ..	Others (non-estates)	—	—	1	7	—	10	1	796

In addition to the panel aspects of the Scheme, service was rendered to non-panel contributors at a fixed rate of fees which were paid into the Treasury, the total proceeds of the Scheme, as shown in departmental records, being tabulated below :—

Year	Proceeds								
	Panel			Non-Panel			Total		
	£	s.	d.	£	s.	d.	£	s.	d.
1945 ..	304	9	7	53	0	0	357	9	7
1946 ..	196	17	6	125	1	0	321	18	6

NEVIS.

Scheme D54. **Agricultural Development in Nevis.**

41. This scheme, the original five year plan for agricultural development in Nevis, was continued through the year. The work undertaken was confined to maintaining the existing development, to making improvements to water supplies on some of the settlements, and to the maintenance charges of an imported French Canadian light draught stallion, introduced for the purpose of improving the size and type of the average Nevis horse : during the year seventeen (17) mares were brought for service.

Scheme D343. **Purchase and development of land settlement areas in Nevis.**

This scheme provided for the purchase of New River and Maddens estates with the demarcation and development of small holdings on the rental system. Progress during the year was made with regard to soil conservation measures, development of fodder crops and provision of stud services. Further development at the Maddens estate as a livestock centre was held up pending the allocation of further funds for this project. The muscavado sugar factory at New River estate continued to operate to the benefit of the cane growers within this district.

MONTSERRAT.

Scheme D31. **Agricultural Development in Montserrat.**

42. Progress with the application of this scheme was continued and both the Demonstration and Stud centres provided for under this scheme were operated.

Scheme D666. **Otway Peasant Settlement.**

The two original schemes approved in connection with this settlement area have now been combined under the above number D666. The main work during the year consisted of the operation of the Central Farm and Ginnery with the purchasing of the allottees' cotton crop. There are at present 290 allottees on this settlement who for the most part are gradually taking to approved agricultural methods.

VIRGIN ISLANDS.

Scheme D293. **Agricultural Development in the Virgin Islands.**

43. The entire work of the Department is financed by this scheme and the principal developments so far have been the establishment of the Agricultural Station and livestock improvement. Housing for the pig and sheep units were completed during the year and the only remaining buildings to be erected are a stockman's house and poultry equipment such as houses, runs, etc.

Livestock.

Activities under this head were directed towards the maintenance and control of the established export trade to St. Thomas, including application of the tick control campaign, (2) general livestock improvement including pasture and fodder crop development.

Livestock Shipments.

During the year, livestock to the value of £21,859 were shipped to St. Thomas. All of these animals were examined prior to shipment and certified as to being free from cattle ticks. The modified dipping programme as carried out during 1945 was continued.

General Livestock Improvement.

Cattle.

Further work was carried out in the development of an improved type of animal suitable for the export market and observations continue to show that the progeny resulting from the crossing of the Red Poll x Senegal bulls with the native cows is of a very desirable type and one which is meeting with favour in the St. Thomas market. The Department is sponsoring this work by (a) the breeding and distribution of this type of bull to livestock owners, which is being done through the maintenance of a Red Poll x Senegal herd at the Station. This serves not only for the production of suitable bulls but also as a demonstration unit of improved methods of animal husbandry, especially in relation to the maintenance of cattle in good condition over a drought period, an almost annual feature in the Virgin Islands : (b) the provision of this type of bull for service — two bulls at stud rendered forty-one (41) services during the year.

Horsekind.

The services of an imported French Canadian stallion of light draught type and an American Jack for mule breeding were available—fifteen (15) mares were served by the stallion and fourteen (14) by the jack.

Sheep.

A small unit of high grade Black Head Persian sheep was established at the Station, the breeding policy being the grading up of native ewes by the provision of stud service and the distribution of rams.

Pigs.

A young Canadian Berkshire boar and sow were imported and the policy in this connection will be similar, namely the boar at stud and distribution of breeding stock for up-grading on native pigs.

SECTION III.

SUMMARY OF LEGISLATION CHANGES.

ANTIGUA. Nil.

ST. KITTS-NEVIS.

1. The Landing of Animals Prohibition Order 1944 (S.R. & O. 1944, No. 5) prohibiting conditionally the landing in the Presidency of Equines brought from the Colony of Trinidad and Tobago was rescinded by the Landing of Animals (Rescission) Order, 1946 (S.R. & O. 1946, No. 8).

2. The Landing of Animals Prohibition Order, 1937 (S.R. & O. 1937, No. 14) prohibiting the landing in the Presidency of Dogs and Cats brought from the continent of North America was rescinded by the Landing of Animals Prohibition Order, 1946 (S.R. & O. 1946, No. 12) whereunder importation is permitted conditionally.

3. The Landing of Animals Prohibition (No. 2) Order, 1944 (S.R. & O. 1944, No. 13) prohibiting the landing of dogs and cats in the Presidency when brought from the Presidency of Montserrat was rescinded by the Landing of Animals (Rescission) (No. 2) Order, 1946 (S.R. & O. 1946, No. 14).

4. The Diseases of Animals Ordinance, 1917 was amended further by the Diseases of Animals (Amendment) Ordinance, 1946 (No. 6 of 1946), the object of the Bill being to control the landing of animals in the Presidency generally rather than from specified places as was provided in the subsection repealed

MONTSERRAT.

The Forestry Ordinance, 1946.

VIRGIN ISLANDS. Nil.

L. R. HUTSON,

Acting Director of Agriculture.

30th April, 1947.

Report by the Chief Veterinary Officer Leeward Islands Colony On Animal Health during the year 1946

A. Livestock in the Colony

1. During the year a census was taken within the Colony which included a section devoted to collective information on livestock in general. These figures while representing the only official information available with regard to numbers of livestock, especially cattle, are probably on the conservative side. The following statistics represent the numbers of various classes of livestock within the Colony :—

Cattle	*Sheep*	*Goats*	*Swine*	*Horsekind*	*Poultry*
18,959	11,699	15,884	5,878	2,989	66,274

The general position with regard to livestock in the Colony has been discussed elsewhere in the Annual Report of the Department of Agriculture and further reference is therefore considered unnecessary, except to state that the Veterinary Section is connected with animal husbandry in all its aspects.

B. General Position with regard to Animal Health.

2. The Colony continues to enjoy freedom from the majority of the serious infectious and contagious diseases which exact such heavy toll in other countries. The general statement as made in last year's report still is applicable, namely, Bovine Tuberculosis, especially in Antigua, continues to be the biggest offender while Parasitism, especially internal, and Malnutrition associated with a low standard of animal husbandry are observed throughout the Colony. However, during the year under review the average standard of animal health was maintained. It is gratifying to record that no new diseases were recorded.

The following is a summary of observed and reported animal diseases :—

(I) Infectious and Contagious Diseases.

CLASS OF ANIMAL	BACTERIAL	VIRUS	SPIROCHAETAL	PROTOZOAN	FUNGOUS
Equines ..	Tetanus Pyosepticemia Leucorrhea				
Cattle ..	Tuberculosis Mastitis Pasteurellosis Metritis			Piroplasmosis Anaplasmosis	Ringworm
Goats ..	Tetanus Metritis Mastitis			Coccidiosis	
Swine ..	Tuberculosis Pasteurellosis				
Poultry ..	Mixed Infections Fowl Typhoid	Roup Fowl Pox Leucosis Complex		Coccidiosis	
Dogs ..			Leptospirosis	Piroplasmosis	

(II) Parasitism.

In Equines, cattle, goats, swine, poultry, dogs and cats — (a) Helminthiasis (b) Ecto-parasitis.

(III) Miscellaneous Diseases.

Traumatic injuries and Lamenesses including wounds, Laminitis, Seborrhoea, Spavin, Fractured Pelvis, Patellar Dislocation, Insect stings, Urticaria, Cysts, Hygroma of the Elbow, and Canker.

(IV) Diseases of the Respiratory System.

Coryza, Pneumonia, Epistaxis.

(V) Diseases of the Alimentary System.

Bovine and Equine Indigestion of various forms, Choke, Scours (calf).

(VI) Diseases of the Genito-Urinary System.

Dystokia, Retained Placentae, Vaginal and Uterine Prolapse, Cervical Atresia.

(VII) Deficiency Diseases.

Avitaminosis, Hypocalcemia, Hypomagnesemia.

(VIII) Diseases of the Skin.

Eczema and Non-Parasitic Dermatitis.

(IX) Poisoning.

Lead and Hydrocyanic Acid.

Review of Diseases.

3. The following call for comment :—

A. Bovine Tuberculosis.

The position with regard to the incidence of this disease in the Colony may be summarized briefly as follows :—

ANTIGUA.

The incidence of the disease still continues to be high especially in the working cattle. During the year, 1,141 tuberculin tests were carried out, mostly on estates, with a 12.8 percentage of reactors.

A comprehensive scheme was prepared for the control of this disease within the Colony, including the required legislation to enforce such a programme, but it is regretted that no place could be found for this in the ten year plan under Colonial Development and Welfare funds.

ST. KITTS-NEVIS.

The resident Veterinary Officer records as follows :— "While the recorded incidence of this disease as determined by a survey undertaken in 1944 would appear to be somewhat low in comparison with some islands of the Colony, it is worthy of note that it is not only by no means negligible but that in other countries it would be considered alarmingly high. The existing rate of incidence of the disease, moreover, with its consequent economy and practicability of eradication would be expected to prompt the introduction of eradication measures. It is disappointing, therefore, that the proposals submitted for inclusion in the 10 year plan under C.D. & W. funds for the eradication of this disease which has an important bearing on Public Health, were not approved.

During the year, many tests and retests were made of Government animals with negative results. As regards privately-owned animals, the wisdom of continuing T.B. testing on a free and voluntary basis is open to much doubt as, in the absence of enabling legislative authority, relevant veterinary advice relative to introductions, disposals and transfers is often ignored with impunity.

While there was only one reactor — a privately-owned animal — in those tested, the disease, especially Porcine T.B., continued to be in evidence at the Basseterre Abattoir."

MONTSERRAT.

No additional surveys were carried out during the year in view of the almost insignificant percentage of reactors found in the 1944 and 1945 surveys. Protective legislation is now in force to prohibit the importation of all cattle unless

accompanied by a negative tuberculin test certificate. Further legislative measures are now being considered for the enactment of compulsory registration, and testing of all cattle with slaughter of all reactors.

B. Equine Colic—Enzootic Colic (St. Kitts).

The resident Veterinary Officer has once more prepared a very comprehensive and instructive report on the incidence of this type of illness amongst equines. This report will in due course be submitted to the Secretary of State for the Colonies for consideration by the Colonial Advisory Council on Animal Health. In view of this it is proposed to present here a brief summary of this report as follows :—

The opinion is expressed that during the year there was some improvement in the management of sugar estate animals and an effort made to provide the animals with more green fodder than usual during the out-of-crop (Sugar) season. With regard to the Feeding and Management experiments initiated during 1945, the comparative information expected to accrue has been disappointing, mainly due to unavoidable changes in feeding schedules. However, although no definite conclusion is forthcoming from these, it is considered, in a large measure, that they served a useful purpose by emphasizing the importance of feeding and management. Several tables are included dealing with the comparative statistics including numbers of cases reported during the years 1940—46; the number of deaths, percentage of mortality and mean annual rainfall figures; a summary of cases reported during the year (1946); monthly distribution of 1946 cases especially in relation to rainfall. The number of reported cases during 1946 was thrity-seven (37) with nine (9) deaths, a mortality percentage of 24.3 as compared to nineteen ((19) cases with seven (7) deaths, a mortality percentage of 36.8 during 1945. The horse and mule population in St. Kitts, according to the 1946 Census, is 674 which gives an island colic incidence of approximately 5.5% over the twelve month period, a figure which under existing conditions of equine animal husbandry in St. Kitts, is not considered alarming. The general conclusion is reached that the basic cause in the majority of cases of this illness in St. Kitts, as in most places, is faulty management, especially improper feeding and poor feed.

C. Parasitism.

The usual degree of internal parasitic infestation was noted in the various classes of livestock through the Colony. From limited observations at the Central Experiment Station, Antigua, encouraging results in the control of sheep nemathelminths are being obtained by the controlled use of Phenothiazine as a drench and its incorporation in salt licks in a 1 to 10 strength.

ST. KITTS

The prevalence of kidney worm (S. Dentatus) infestation in pigs as evidenced by Abattoir findings prompted the initiation of an experiment in the pig unit at Bayfords Farm, St. Kitts, designed to demonstrate practical methods for the control of this parasite. It is gratifying to record that there was a complete absence in post-mortem inspection of both kidney and roundworm (Lumbricoides) infestation in the two carcasses raised under such conditions. Numerous routine treatments for internal parasites in different classes of livestock were carried out and advice and demonstrations given as to approved methods of parasitic control.

Ecto-parasitis.

There are now five (5) dipping tanks in operation, four in Antigua and one in St. Kitts, in addition to those which are being maintained in the Virgin Islands. The response to the use of these tanks continues to be very encouraging and the number of livestock owners making use of this service is increasing considerably. It is proposed to construct a fifth tank in Antiuga during 1947. The modified dipping programme continued in the Virgin Islands which area remains as one being accredited free of the cattle tick.

General.

4. The Veterinary section of the Department is responsible for measures directed towards the non-introduction and dissemination of communicable diseases, principally through the importation of livestock, and this service was maintained through the year. In addition, the meat inspection service in St. Kitts while under the auspices of the Health Department, is under the control of the resident Veterinary Officer. In Antigua, the meat inspection service is carried out by a veterinarian employed on a part time basis, such officer being under the control of the Health Department. The operation of the Government Veterinary Service in St. Kitts has been already commented on elsewhere in the Departmental report in the section dealing with the appropriate Development and Welfare Scheme.

5. A summary of legislative changes as affecting livestock appears elsewhere in the Departmental report.

L. R. HUTSON,

Chief Veterinary Officer.

30th April, 1947.